



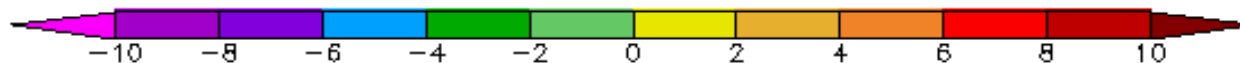
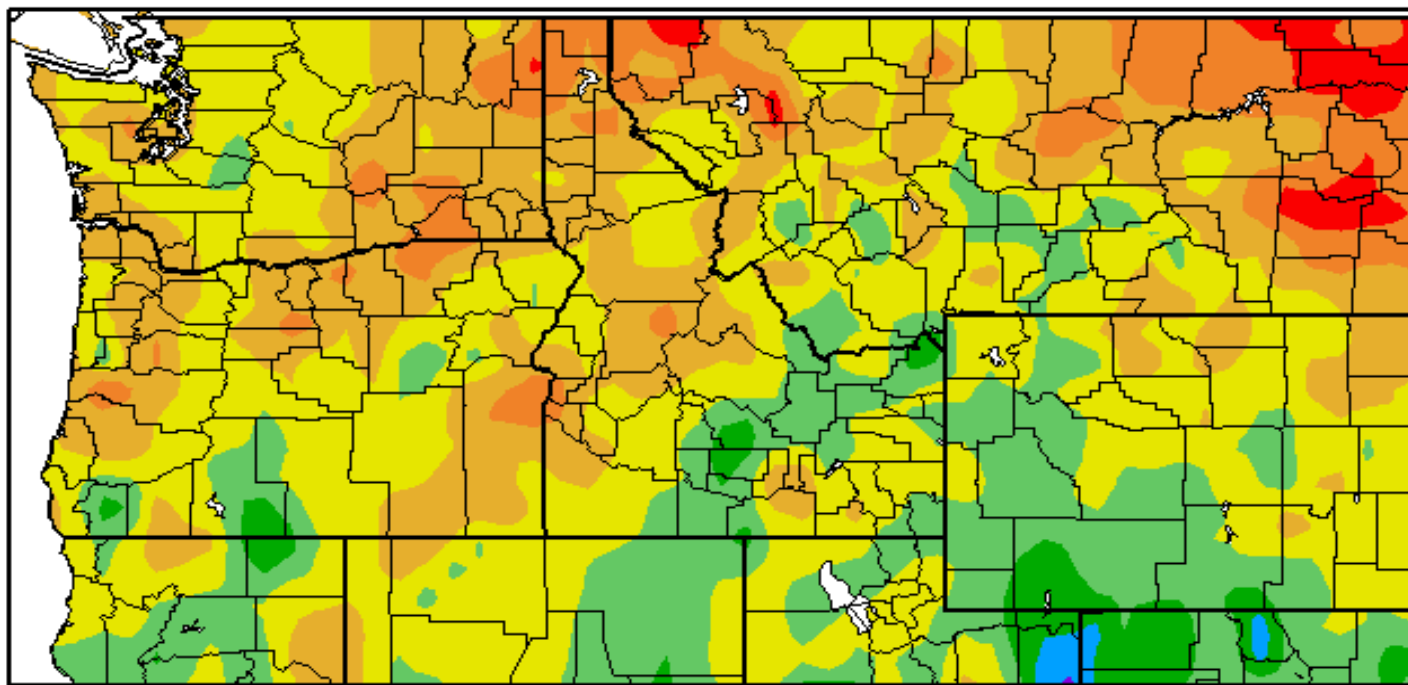
# The Month In Review

## December 2015

National Weather Service  
Pendleton, Oregon

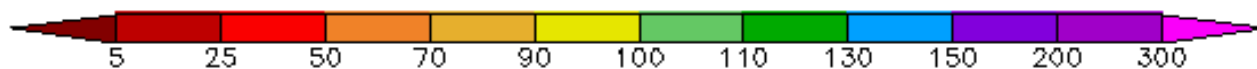
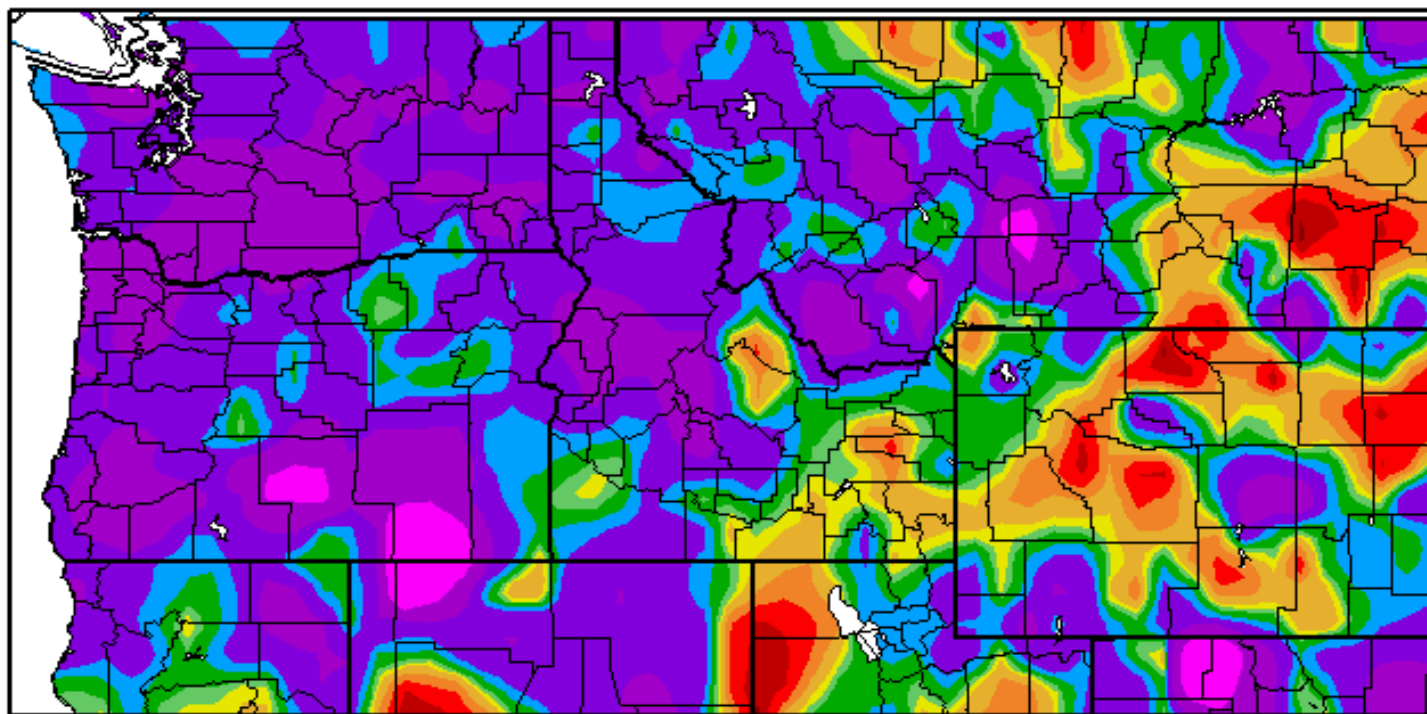
# Departure From Normal Temperature (F)

Departure from Normal Temperature (F)  
12/1/2015 – 12/31/2015



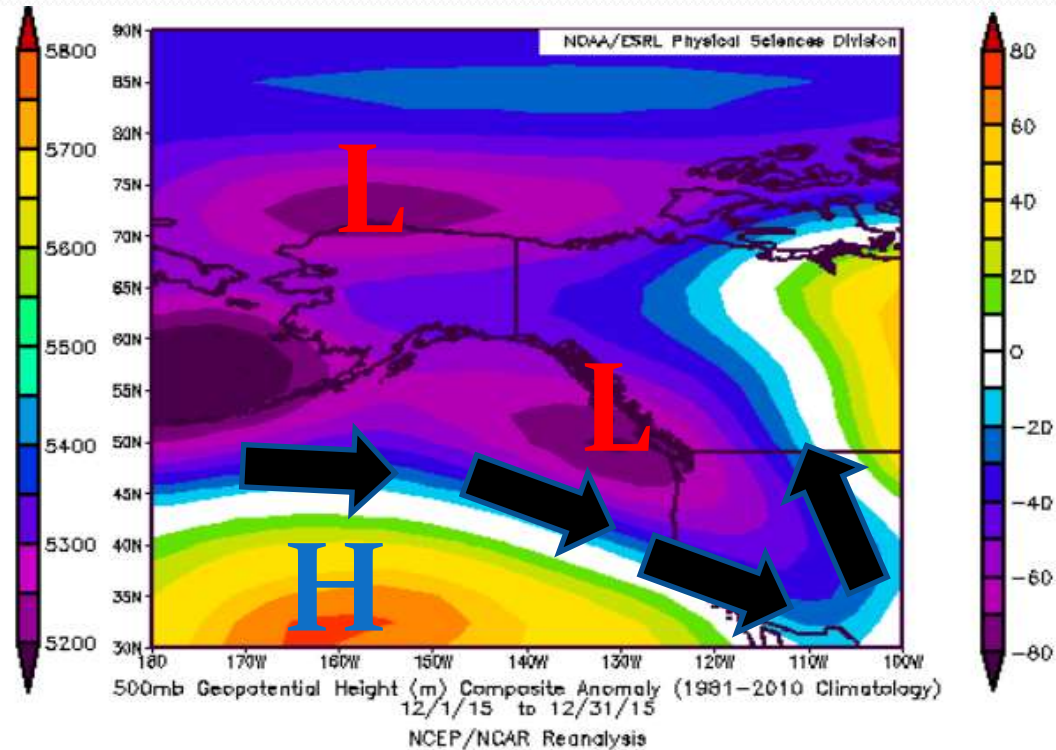
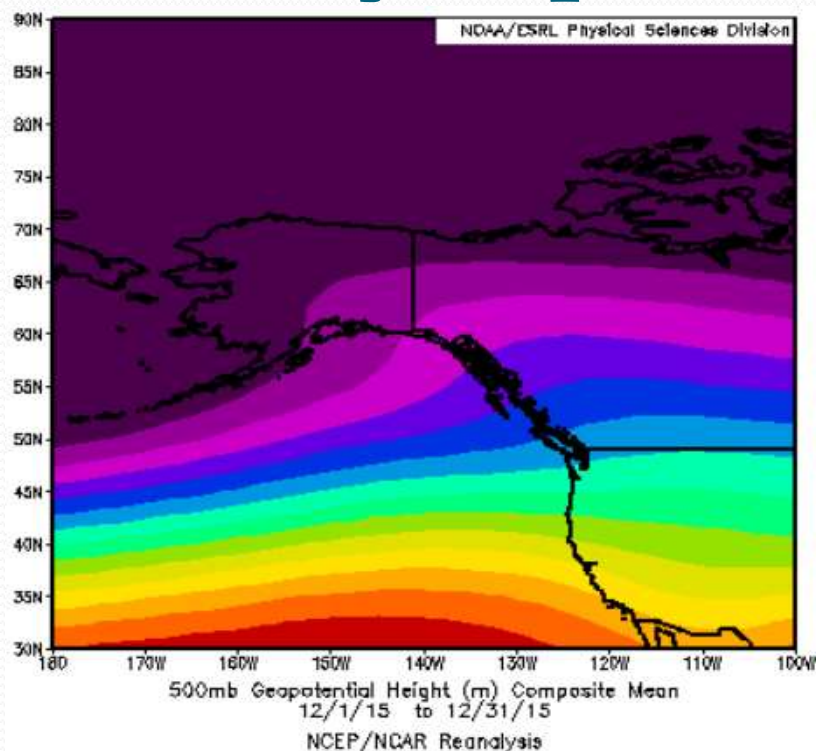
# Percent of Normal Precipitation (%)

Percent of Normal Precipitation (%)  
12/1/2015 – 12/31/2015



# December 2015

## Synoptic Weather Pattern



The mean synoptic pattern for the month of December 2015 was characterized by a large, anomalous trough across Alaska, Northwest Canada and into the Western United States. There was an upper level ridge of high pressure located over the subtropical Pacific Ocean, which acted to further enhance the jet stream winds directed at the West Coast. This pattern ultimately allowed for some temperature swings through the month, but averaging out near to above normal along with significantly enhanced precipitation amounts. In general there was above to well above average precipitation over the much of the region, with variable but generally above average snowfall as well. The snowpack, and more specifically the Snow Water Equivalent over the Pacific Northwest ended the month between 100 to 175 percent of normal.



# Top 7 December Record Daily High Temperatures

City	Rank	Dec 2015 Max T	December Max T Record
Meacham, OR	#1	56° on 12/08	55° on 12/01/2008
The Dalles, OR	#1(T)	66° on 12/08	66° on 12/03/1982
Hermiston, OR	#1	72° on 12/08	70° on 12/03/2007
Pasco, WA	#1	69° on 12/08	67° on 12/03/2007
Goldendale, WA	#1	61° on 12/09	60° on 12/01/1941
Moro, OR	#1	65° on 12/09	63° on 12/15/2002
Moxee City, WA	#1	61° on 12/08	60° on 12/16/1999
Arlington, OR	#2	69° on 12/09	74° on 12/21/1933



# Top 7 December Record Daily High Temperatures (Cont'd)

City	Rank	Dec 2015 Max T	December Max T Record
Richland, WA	#2(T)	66° on 12/08	69° on 12/09/1946
Yakima, WA	#3(T)	64° on 12/08	67° on 12/26/1980
Walla Walla, WA	#4(T)	67° on 12/08	71° on 12/10/2014
Kennewick, WA	#4(T)	69° on 12/09	71° on 12/18/1917
Monument, OR	#4(T)	66° on 12/09	70° on 12/10/1993
Sisters, OR	#5(T)	61° on 12/09	64° on 12/27/1980
Whitman Mission	#5(T)	67° on 12/09	70° on 12/27/1980
Pendleton, OR	#7(T)	66° on 12/08	68° on 12/22/1933





# Daily December Minimum Temperature Records

City	Dec 2015 Min T	Previous Dec Daily Min T Record
Sunriver, OR	-7 on 12/26	4° on 12/26/2008
Sisters, OR	-5 on 12/01	4° on 12/01/1985
Redmond, OR	0 on 12/01	4° on 12/01/1985
John Day, OR	7 on 12/01	8° on 12/01/2006
Meacham, OR	-4 on 12/25	2° on 12/25/2009
Long Creek, OR	4 on 12/01	5° on 12/01/2014
Madras, OR	3 on 12/01	3°(T) on 12/01/1954*
Easton, WA	11 on 12/26	13° on 12/26/2009

\* Indicates the daily record low temperature also occurred in one or more previous years.



# Top 10 December Record Highest 1-Day Precipitation

City	Rank	Dec 2015 1-Day Precip	Record Highest 1-Day Dec Precip
Easton, WA	#1	3.53" on 12/09	2.54" on 12/21/2014
Moxee City, WA	#2	0.93" on 12/07	1.42" on 12/13/1977
Meacham, OR	#2	2.12" on 12/07	2.48" on 12/27/2008
Pasco, WA	#3	0.62" on 12/07	0.73" on 12/13/2003
Pendleton, OR	#4	0.91" on 12/07	1.25" on 12/04/1978
Ellensburg, WA	#4	0.72" on 12/07	1.03" on 12/14/2006
The Dalles, OR	#5	1.63" on 12/07	2.12" on 12/13/1977
Walla Walla, WA	#6	1.08" on 12/07	1.39" on 12/05/1971
Cle Elum, WA	#10	1.97" on 12/09	3.67" on 12/09/1933





# Top 10 Monthly December Precipitation Records

City	Rank	Dec 2015 Precipitation	Highest December Precipitation
Easton, WA	#1	13.45 Inches	11.09 Inches in 1934
Ellensburg, WA	#1	3.45 Inches	3.07 Inches in 2002
Meacham, OR	#2	8.20 Inches	8.96 Inches in 1973
Mt. Adams RS	#2	20.38 Inches	27.37 Inches in 1933
The Dalles, OR	#4	6.02 Inches	8.96 Inches in 1964
Hermiston, OR	#4	1.79 Inches	2.77 inches in 2010
Pasco, WA	#4	1.73 Inches	2.11 Inches in 2002
Yakima, WA	#4	3.47 Inches	5.59 Inches in 1996
Goldendale, WA	#4	6.93 Inches	9.88 Inches in 1964
Pelton Dam, OR	#5	3.09 Inches	5.23 Inches in 1964



## Top 10 Monthly December Precipitation Records (Cont'd)

City	Rank	Dec 2015 Precipitation	Highest December Precipitation
Long Creek, OR	#5 (T)	2.89 Inches	4.27 Inches in 1981
Pendleton (City)	#6(T)	2.60 Inches	3.32 Inches in 1925
Dayville, OR	#7	1.63 Inches	2.74 Inches in 1983
Dayton, WA	#7	4.92 Inches	6.31 Inches in 1996
Cle Elum, WA	#7	7.31 Inches	14.44 Inches in 1933
Redmond, OR	#8	1.88 Inches	5.48 Inches in 1964
Moro, OR	#8	3.29 Inches	6.11 Inches in 1964
Richland, WA	#10	1.90 Inches	2.83 inches in 1973
Arlington, OR	#10	2.84 Inches	6.87 Inches in 1964



# Top 10 Daily December Snowfall Records & Top 10 December Snow Depth Records

City	Rank	Dec 2015 Snowfall	Highest Daily Dec Snowfall
Sunriver, OR	#7	5.2" on 12/17	10.9" on 12/01/2005
Dayville, OR	#8	2.0" on 12/17	8.0" on 12/24/1983
Easton, WA	#9	11.0" on 12/18	24.0" on 12/18/2008

City	Rank	Dec 2015 Max Snow Depth	Highest Daily Dec Snow Depth
Sunriver, OR	#1	23" on 12/24	22" on 12/05/2001
Easton, WA	#6	53" on 12/24	62" on 12/30/2007



## Top 10 December Monthly Snowfall Records

City	Rank	Dec 2015 Snowfall	Highest Monthly Dec Snowfall on Record
Easton, WA	#4	62.0"	90.0" in 2008
Sunriver, OR	#7	20.4"	30.9" in 2008
Yakima, WA	#8	15.9"	37.5" in 1964
Bickleton, WA	#9(T)	20.1"	36.0" in 1992
Dayville, OR	#10	3.8"	16.1" in 1983



# December Significant Weather

# December 1 – 2<sup>nd</sup>

## Cold & Light Snow Event

Location	Snow Total	Coldest Temperature
Yakima, WA	1.3"	24 Degrees
Cle Elum, WA	1.6"	17 Degrees
Goldendale, OR	2.5"	21 Degrees
Hanford, WA	2.9"	23 Degrees
John Day, OR	2.0"	7 Degrees
Kennewick, WA	2.3"	25 Degrees
La Grande, OR	0.1"	15 Degrees
Long Creek, OR	0.8"	4 Degrees
Mcnary Dam, OR	2.5"	26 Degrees
Moro, OR	0.5"	18 Degrees
Pendleton, OR	0.8"	19 Degrees
Sunnyside, WA	2.5"	M
Whitman Mission	2.0"	24 Degrees



A weak trough of low pressure approached the area during the overnight hours on December 1<sup>st</sup> into December 2<sup>nd</sup>. Even though initial indications were that freezing rain would be an issue, the atmosphere remained just cold enough through all levels to allow most of the precipitation to fall as light snow. Snow totals mainly ranged from a half inch up to three inches area wide. Behind this system temperatures dropped and it became quite cold.



# December 6 – 11<sup>th</sup> Warm Up, Heavy Rainfall, Flooding & Landslides

Location	6 Day Rain Totals	Highest Temperature
Walla Walla	1.45 Inches	67 Degrees
Meacham	3.33 Inches	56 Degrees
The Dalles	2.65 Inches	66 Degrees
Ellensburg	1.58 Inches	52 Degrees
Hermiston	0.74 Inches	72 Degrees
Pendleton	1.23 Inches	66 Degrees
Pasco	1.05 Inches	69 Degrees
Yakima	1.47 Inches	64 Degrees
Cle Elum	4.28 Inches	46 Degrees
Easton	6.67 Inches	48 Degrees
Goldendale	3.50 Inches	61 Degrees



Flooding on South Naches Road, Wednesday, December 9th, 2015 (Courtesy: Steven Mack)

A strong jet stream combined with multiple fast moving weather systems and ample Pacific moisture to produce periods of moderate to heavy rain across the region. In the maritime flow temperatures also surged into the 60s and even lower 70s, leading to many record highs. The heavy rain and snow melt lead to significant rises on area rivers with minor to moderate flooding being reported on the Yakima and Naches rivers. A dangerous landslide also occurred on highway 12 near White Pass which washed out the roadway rendering it impassable for days.



# December 12 – 13<sup>th</sup> Mtn Snow Event



A series of low pressure systems, with a cold frontal passage, a warm frontal passage and a final cold front moved through the area on the 12<sup>th</sup> & 13<sup>th</sup>. This complex weather pattern lead to fluctuating snow levels during the event. A moist northwest upslope flow allowed accumulating snow to continue onto the 13<sup>th</sup> in the Blue Mountains. Highest totals were above 3500-4500 feet in elevation where the precipitation remained all snow.

Location	Snowfall Total
Mt. Bachelor	20.0 Inches
5NNW La Pine	16.0 Inches
6S Sunriver	15.0 Inches
Tollgate	14.0 Inches
13SW Mitchell	12.0 Inches
Ski BlueWood	12.0 Inches
Seneca	8.0 Inches
1SE Flora	7.0 Inches
6ESE Paulina	6.9 Inches
1.5 WSW Bend	3.5 Inches
1S Bend	3.0 Inches
4NW Meacham	3.0 Inches
2WNW Sisters	2.0 Inches
Snowden	2.0 Inches
1.8 WSW Redmond	0.8 Inches

# December 17 – 23<sup>rd</sup> Significant Snow & Wind Events

Location	7 Day Snowfall
Easton, WA	52.0 Inches
Cle Elum, WA	30.0 Inches
2WNW Sisters	28.6 Inches
Snowden, WA	26.5 Inches
5N La Pine, OR	19.0 Inches
Sunriver, OR	18.3 Inches
4NW Meacham	17.4 Inches
6ESE Paulina	16.5 Inches
Joseph, OR	12.1 Inches
Yakima, WA	12.0 Inches
2S Bend, OR	10.9 Inches
White Salmon	9.0 Inches



Image Credit: Pedro Quintana KTVZ Bend, OR

Location	Peak Wind Gust
6SSE Joseph	73 MPH
11SSE Waitsburg	72 MPH
Pendleton, OR	69 MPH
Madras Airport	68 MPH
4WNW Shaniko	68 MPH
Redmond, OR	64 MPH
Hermiston, OR	64 MPH
5W Condon	60 MPH
Lexington, OR	59 MPH
7W College Pl.	59 MPH
Grass Valley, OR	55 MPH
Sisters, OR	55 MPH

A series of powerful storm systems impacted the interior Pacific Northwest during this time period as a deep upper level trough developed over the region. Seven day snowfall totals were very impressive, especially along the East Slopes of the Cascades. Many of the Cascade passes were impacted and some were even closed at times due to deep snow. Very strong, and even damaging winds occurred on December 21<sup>st</sup> with gusts between 60 to 70 MPH being quite common.



# December 27 – 31<sup>st</sup> Turning Colder With Light Snow



A deep, cold, upper level trough moved over the region during this time. Several rather weak disturbances also moved through, which combined with increasing moisture to produce periods of light snow. Temperatures also dropped off into the teens and twenties for overnight lows. A few locations with fresh snow cover dropped into the single digits or even below zero.

Location	5 Day Snow Totl	Coldest Temperature
Ellensburg	6.0 Inches	-2°
Trout Lake, WA	6.0 Inches	23°
White Salmon	4.9 Inches	30°
4NW Selah	3.5 Inches	M
Condon, OR	3.4 Inches	17°
Cle Elum, WA	3.4 Inches	4°
Yakima, WA	2.6 Inches	4°
Snowden, WA	2.5 Inches	17°
12 SW Canyon City, OR	2.1 Inches	M
6ESE Paulina	2.0 Inches	M
Walla Walla	1.0 Inches	21°
Echo, OR	0.6 Inches	22°
Sunriver, OR	0.2 Inches	-7°

# Drought Conditions Improving

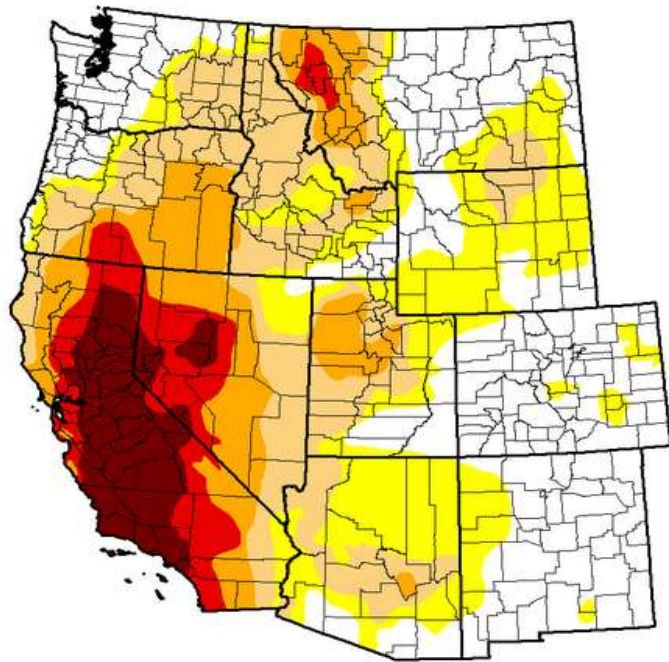
## U.S. Drought Monitor West

January 5, 2016  
(Released Thursday January 7, 2016)  
Valid 7 a.m. EST

Statistics type:

Traditional Percent Area

Export table:



Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current <a href="#">2016-01-05</a>	33.48	66.52	45.17	25.43	13.09	6.85
Last Week <a href="#">2015-12-29</a>	33.17	66.83	45.07	29.30	15.92	6.85
3 Months Ago <a href="#">2015-10-06</a>	25.71	74.29	57.06	42.43	26.44	7.62
Start of Calendar Year <a href="#">2015-12-29</a>	33.17	66.83	45.07	29.30	15.92	6.85
Start of Water Year <a href="#">2015-09-29</a>	22.77	77.23	57.81	42.42	26.50	7.62
One Year Ago <a href="#">2015-01-06</a>	34.82	65.18	54.24	33.31	18.57	5.40

Estimated Population in Drought Areas: **47,951,847**

[View More Statistics](#)

### Intensity:

D0 (Abnormally Dry)

D2 (Severe Drought)

D4 (Exceptional Drought)

D1 (Moderate Drought)

D3 (Extreme Drought)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying [text summary](#) for forecast statements.

### Author(s):

Brian Fuchs, National Drought Mitigation Center

Download:

The latest drought monitor shows improvement across the Pacific Northwest, with only a small area of D1, or moderate drought lingering in eastern Washington. Most of Eastern Oregon has now been reduced to only D1 to D2 drought status. However, there remains a small area of D3 (severe drought) in south-central Oregon within the Klamath River Basin.

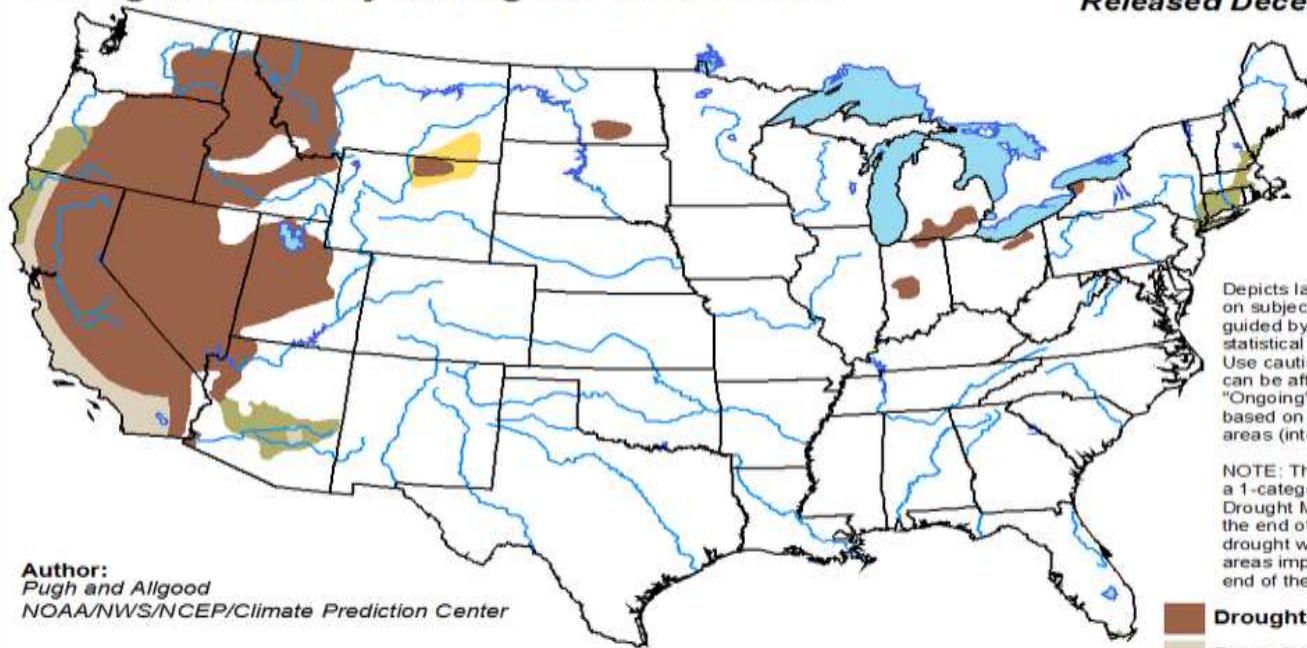




# Monthly Drought Outlook

## U.S. Monthly Drought Outlook Drought Tendency During the Valid Period

Valid for January 2016  
Released December 31, 2015



Author:  
Pugh and Allgood  
NOAA/NWS/NCEP/Climate Prediction Center

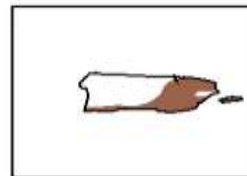
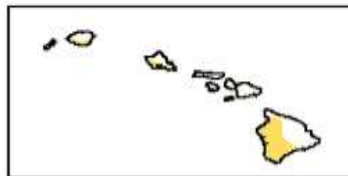
Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely



<http://go.usa.gov/3eZGd>



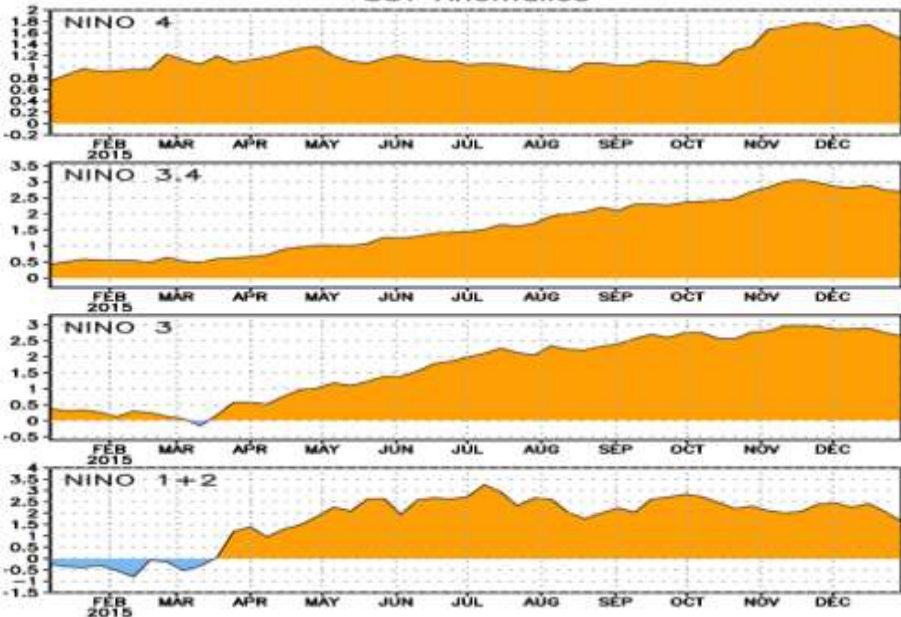
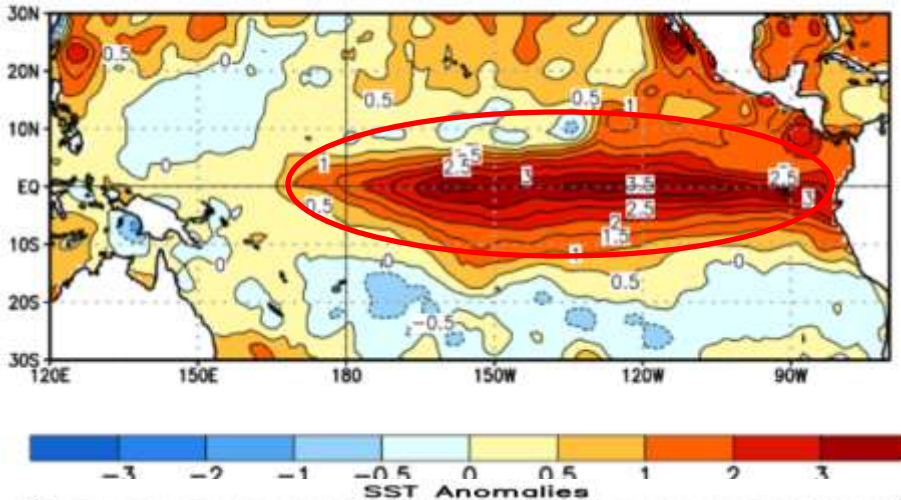
The monthly drought outlook from CPC indicates drought persisting for much of our area. The only exception is southwest to southcentral Oregon where drought removal is likely. This may be updated next month to reflect recent trends in precipitation across our area.





# El Niño Advisory Continues

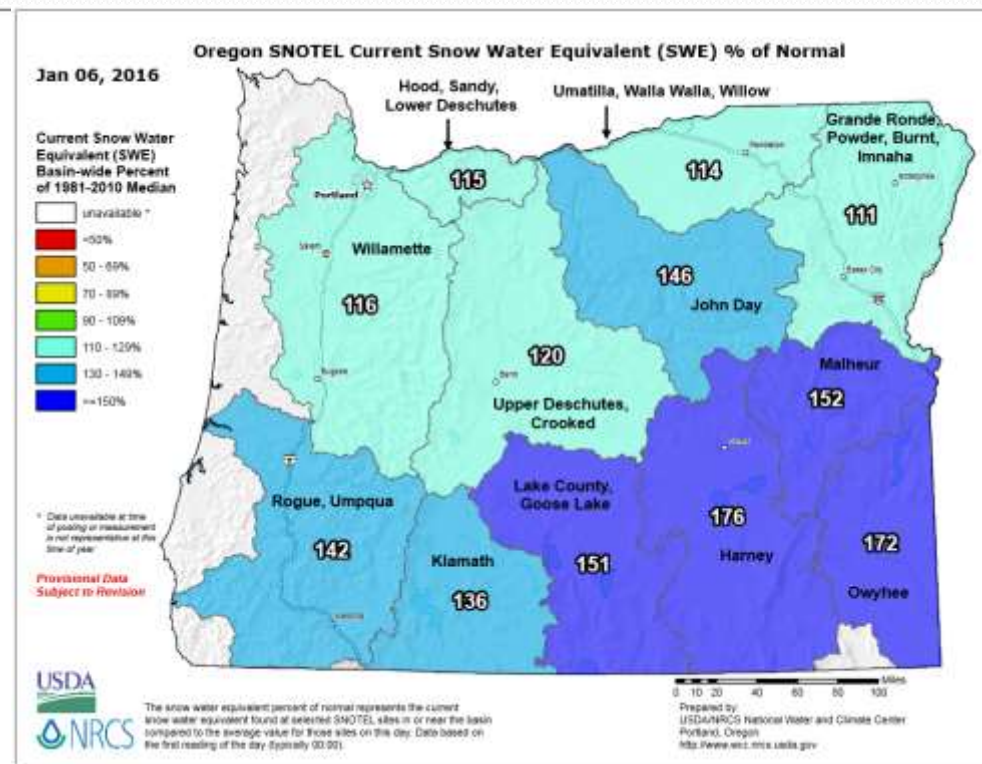
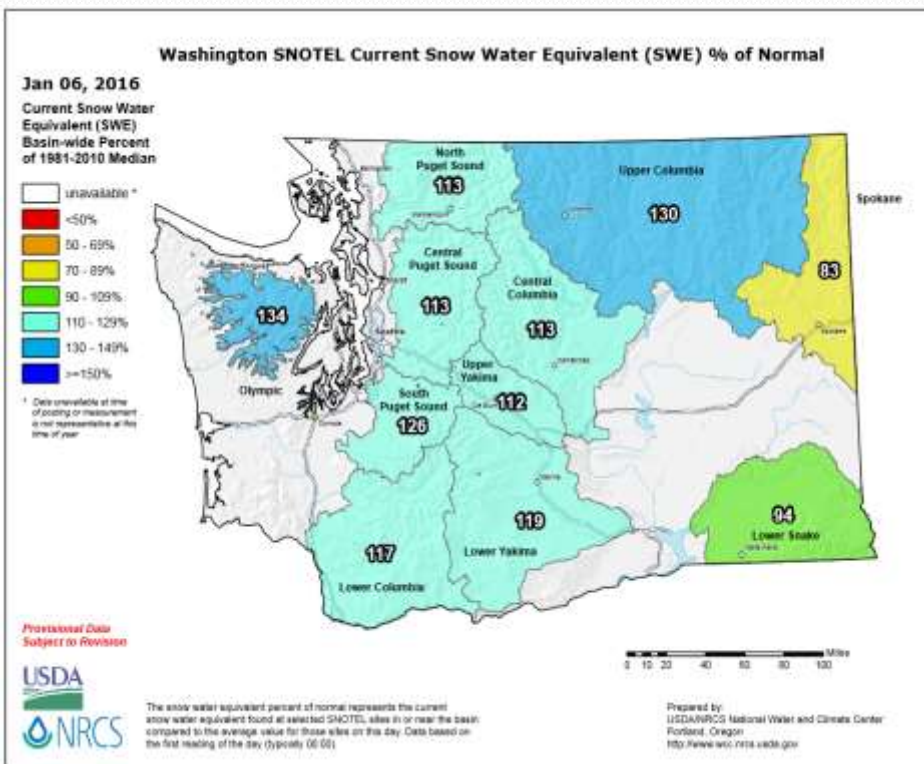
Average SST Anomalies  
6 DEC 2015 – 2 JAN 2016



❖ An El Niño Advisory has been issued by the Climate Prediction Center, with the warmest temperatures noted off the South American coast along the Equator. \*\*El Niño conditions are present\*\*

❖ The Climate Prediction Center has stated that El Niño will likely peak during the 2015-16 winter with ENSO neutral conditions developing by late spring or early summer 2016.

# Current Snow Water Equivalent



Current snow water equivalent (SWE) is running mainly above average across the Pacific Northwest. The only exception to this was over eastern Washington where SWE was between 80 to 95 percent of normal to date. The rest of Washington and Oregon had SWE values generally between 110 to 175 percent of normal.

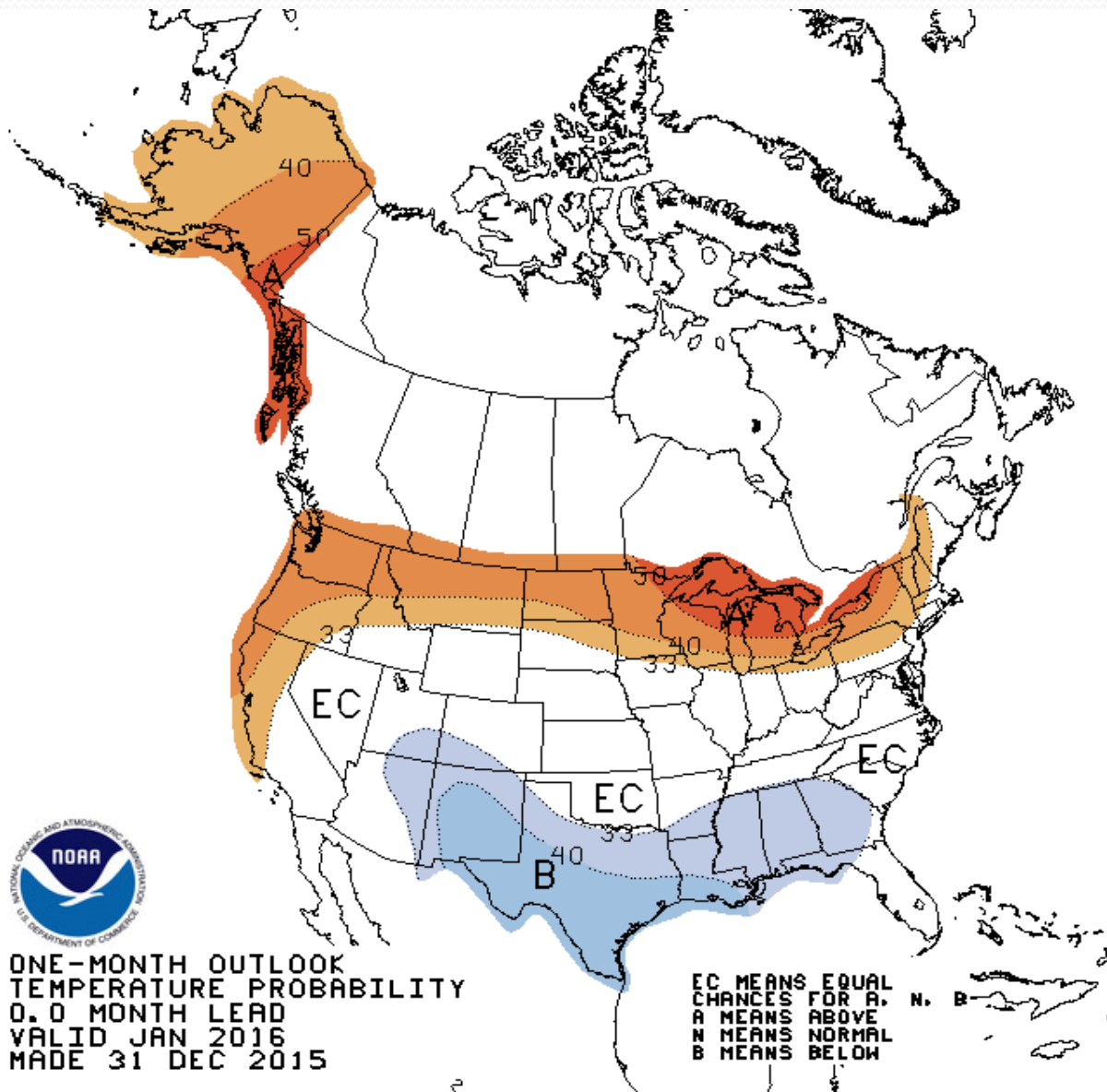


# January Outlook



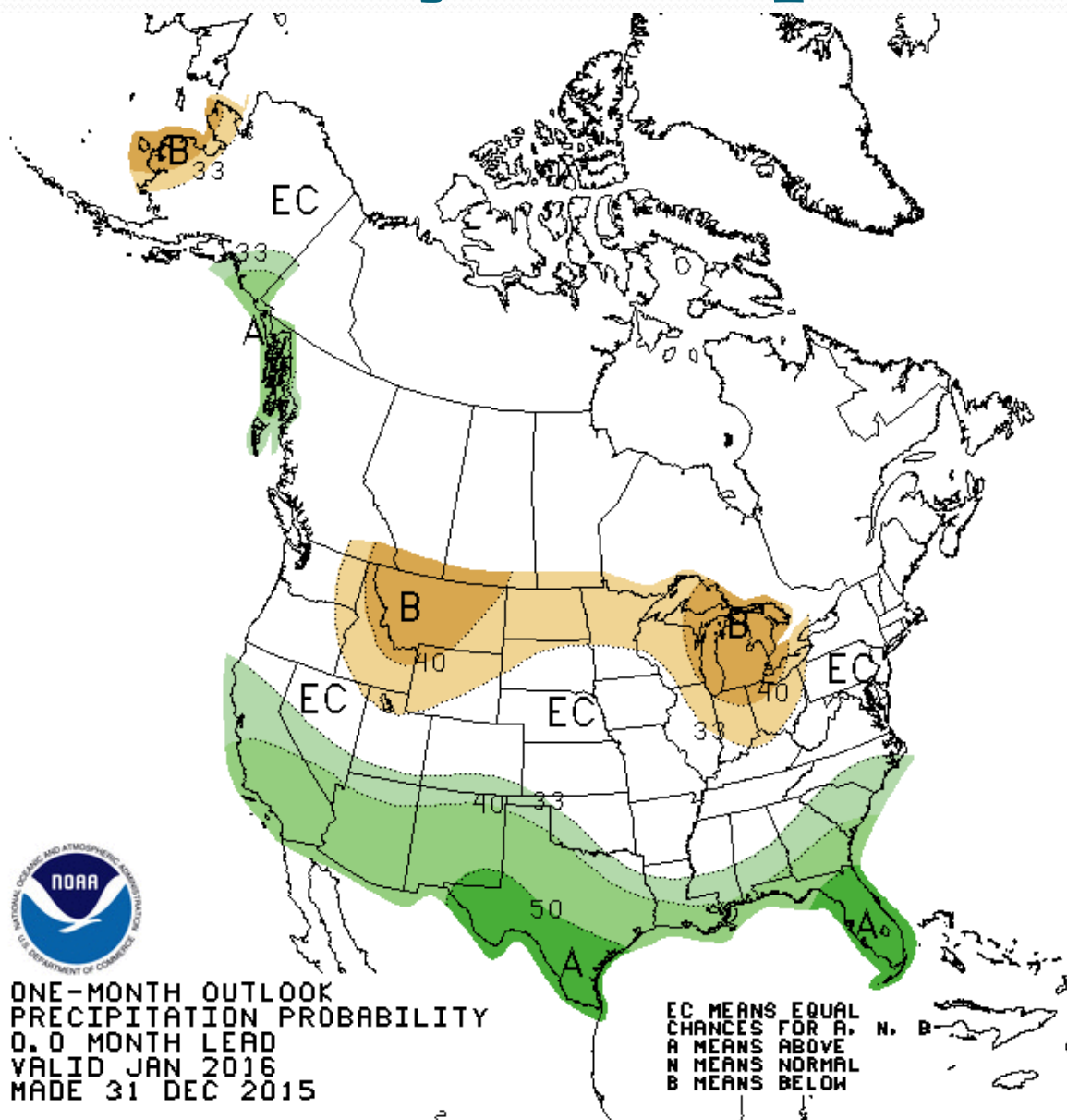
# January Temperature Outlook

This graphic is issued by the Climate Prediction Center or CPC and is the Temperature Outlook for the month of December. The cool colors indicate a greater chance of below normal temperatures and the warm colors represent a greater chance of above normal temperatures. The time period for the normals runs from 1981-2010. Most of the Inland Pacific Northwest has a 33 - 40 percent chance for above average in the month of January, except in southeastern Oregon where there is equal chances for above, below or near normal temperatures.



# January Precipitation Outlook

This graphic is CPC's Precipitation Outlook for the month of December. The green colors represent a greater chance of above normal precipitation, and the brown colors represent a greater chance of below normal precipitation. There are equal chances for above, below or near average precipitation amounts across much of Oregon and Washington in January. Across far eastern Washington and extreme Northeast Oregon there is slightly higher probabilities for below average precipitation amounts in January. Please remember that these are probabilities of averages, and that the day-to-day weather will still vary for the month .



ONE-MONTH OUTLOOK  
PRECIPITATION PROBABILITY  
0.0 MONTH LEAD  
VALID JAN 2016  
MADE 31 DEC 2015



Thank You!